

Notice of Allowability

Application No.

10/680,815

Examiner

Joseph D. Torres

Applicant(s)

KIM ET AL.

Art Unit

2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Response to Election / Restriction Filed 08/21/2006.
2. ☒ The allowed claim(s) is/are 1-8 and 14-16.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 10/074,422.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 6/24/05,3/15/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 20060929.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

JOSEPH D. TORRES
PRIMARY EXAMINER
TECHNOLOGY CENTER 2100

Joseph D. Torres, PhD
Primary Examiner
Art Unit: 2133

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Michael Musella on 9/28/2006.

The application has been amended as follows:

As per claim 1:

In line 11 of claim 1, the phrase "alternately arranging the symbols" was replaced with --alternately arranging the interleaved symbols--.

In line 13 of claim 1, the term --interleaved-- was inserted before the word "parity".

As per claim 14:

In line 7 of claim 14, the phrase "multiplexing the symbols of" was replaced with -multiplexing the interleaved symbols of--.

EXAMINER'S STATEMENT OF REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance: The present invention pertains to an apparatus using a Turbo encoder for channel encoding data followed by a channel interleaver used for mitigating the effects of burst errors followed

Art Unit: 2133

by a rate matcher for matching interleaved symbols to a particular communication channel. Claim 1 recites various features: “a turbo encoder having a plurality of constituent encoders, for receiving information bits, generating a plurality of parity symbol sequences according to a given code rate by encoding the information bits, and outputting an information symbol sequence and the plurality of parity symbol sequences, each of the constituent encoders for generating at least one parity symbol sequence, the at least one parity symbol sequence from one constituent encoder corresponding to the at least one parity symbol sequence from another constituent encoder; a channel interleaver for individually interleaving the information symbol sequence and the parity symbol sequences, **alternately arranging the interleaved symbols of the corresponding parity symbol sequences, and serially concatenating the interleaved information symbol sequence and the arranged interleaved parity symbol sequences; and a QCTC generator for generating a sub-code of a QCTC by repeating the serially concatenated symbol sequence and selecting a predetermined number of symbols from the repeated symbol sequence according to code rate and selection information.**” [Emphasis Added]

Analogously, claim 14 recites “a turbo encoder for receiving information bits, generating a plurality of parity symbol sequences by encoding the information bits, and outputting an information symbol sequence and the plurality of parity symbol sequences; a channel interleaver for individually interleaving the information symbol sequence and the parity symbol sequences, **generating new parity symbol sequences by multiplexing the interleaved symbols of parity symbol sequences, and serially**

concatenating the information symbol sequence and the new parity symbol sequences; and a QCTC generator for generating a sub-code of a QCTC with a given code rate by selecting a predetermined number of symbols from the serially concatenated symbol sequence at a given starting position according to the code rate. [Emphasis Added]

The Prior Art of record (for example, Tong; Wen et al. US 6744744 B1, hereafter referred to as Tong) teaches a Turbo encoder 90 in Figure 5 of Tong for channel encoding data followed by a channel interleaver 93 used for mitigating the effects of burst errors followed by a rate matcher 94 for matching interleaved symbols to a particular communication channel.

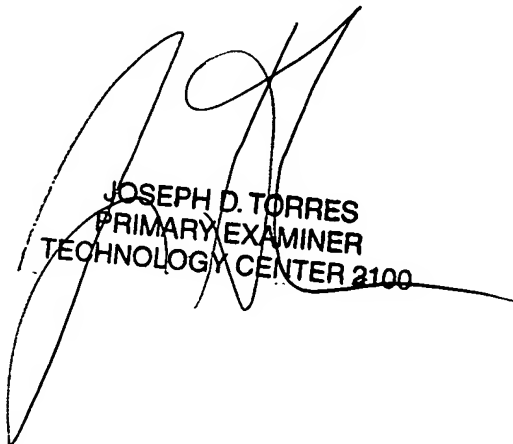
The prior art however are not concerned with and do not teach, suggest, or otherwise render obvious a means and circuit arrangement for rearranging and selecting the channel interleaved symbols as taught by claims 1 and 14. Hence the prior art taken alone or in any combination fail to teach the claimed novel feature in claims 1 and 14.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



JOSEPH D. TORRES
PRIMARY EXAMINER
TECHNOLOGY CENTER 2100

Joseph D. Torres, PhD
Primary Examiner
Art Unit 2133